Notes on the Nidification of some Perak Birds

By A. T. EDGAR

The following paper contains the substance of notes made over a period of years, checked, verified and greatly extended by intensive observation during 1932 and the first half of 1933.

No attempt was made to go far afield in search of nests. All herein described were found within an area of four or five square miles, comprising rubber estate, kampong, secondary jungle, scrub and mangrove in the district of Sitiawan, Perak, Malay States.

Much of the work could not have been accomplished without the assistance of Enche' Teba bin Adam, a small landowner in the neighbourhood, and one of the best type of country Malay, keen, observant, and wise in the ways of Nature.

Malay names, where they appear in the text, are those used by the kampong people, in Sitiawan, Perak.

I am indebted to Mr. F. N. Chasen, Director of the Raffles Museum, for the identification of many of the birds, and for no small measure of help and encouragement in other directions.

These notes are set down, in their incompleteness, as a starting point for further work, and also in the hope that they may be of some interest to those who, like myself, find pleasure in the sight and sound of bird life.

Turnix javanica atrigularis (Eyton). The Bustard Quail.

Malay.—*puyoh.*

The breeding season in this part of the country appears to be from January to June. My earliest record is of four chicks, hatched on 2nd February; my latest, a very young bird, seen on 11th June. The majority of nests and nestlings were seen in February.

The nesting site generally chosen is a small natural hollow, in grass land or light lalang *(Imperatora koenigi)*, under the shade of a bush or young coconut palm. I have found only one nest not so shaded; this was placed amongst fairly thick lalang. The bottom of the hollow is thinly lined with dry grass or straw. The front of the nest is left open, and the sides are protected by sloping walls of dry grass, often intertwined with the living grass stems, and rising at the back to two or three inches in height. Most of the nests face north or west, a few south. I have not so far found one facing due east.

On 15th March, 1932, I found a nest in hoed padi-stubble. A large clod had been left in a semi-upright position and under this the bird had apparently scratched a hollow, which it lined as usual with straw. No walls of any sort were needed, as the eggs were already completely protected from the weather.

Nests may also be found amongst creeping cover-crops (*Calapogonium* etc.) on rubber clearings.

The full clutch of eggs is almost always four, occasionally three, and once, in my experience, five. The average size of sixteen normal eggs is .93 × .8 inches, but one clutch of exceptionally small eggs averaged only .87 × .75. The shell is tough and glossy; in shape a round oval, pointed at one end. The ground colour is greyish olive, heavily marked all over with spots and blotches of varying shades of brown. The density and size of the markings is very variable. Some eggs are fairly uniformly marked all over; others have the blotches much bigger and darker at the larger end.

The nestlings, which are able to run as soon as they are hatched, are lively little things, clad in down. They are brown, paler below, and marked on the upper parts with various shades of lighter and darker brown.

Excalfactoria chinensis chinensis (Linn.). The Blue-breasted Button Quail.

Malay.—*pikau.*

This little quail will be found nesting in situations similar to the last described species, but the eggs are quite different. Generally, they are laid in a small hollow which has been scantily lined with dry grass. Another favourite site is the centre of a tussock, and in such a position the nest is sometimes slightly more elaborate, because in addition to constructing the customary light pad on which the eggs are laid, the bird occasionally weaves dry grass in and out among the living grass stems, making a loosely woven circular cup which may be as much as four inches deep.

The nesting season is from January to April: the clutch, generally six or seven, and I have once seen as many as eight. The eggs vary from rather broad to longish ovals, sometimes sharply pointed at the smaller end. Their ground colour is olive brown, marked all over with very small dark brown specks. Viewed through the blow hole, the inside of the egg is sea green. The average size of 14 eggs is .98 × .78 inches.

Nestlings of this species may be distinguished from those of *Turnix* by the possession of four toes: *Turnix* has only three.

Streptopelia chinensis tigrina (Temm. and Knip). The Malay Spotted Dove.

Malay.—*tĕkukor.*

The nest and eggs of this common bird must be familiar to most people in Malaya. According to Robinson, however, there is little definite information on record about the breeding season, and for this reason, I give the following extracts from my notes.

I have found nests and eggs as early as November but the greatest number in January, February and March, and others up to the end of May.

I have not seen a nest actually on the ground, but one, in January, 1926, was on a pile of sticks not a foot high, in the middle of a padi field. Another found in January, 1932, was no less than twenty-five feet from the ground, on a bamboo stem. Generally, nests may be found in bushes or small trees, between four and ten feet from ground level, often in most exposed positions. The nest is a loosely constructed pad of small twigs, rootlets, and sometimes coarse grass, the pad being about six inches in diameter and one to one and a half inches in depth. The eggs, two in number, are white, glossy, regular ovals, and measure about 1.10 × .86 inches.

In February of this year I found a nest in a peculiar position. The padi harvest was over, and the temporary huts in the padi-land had been vacated. Inside one of these huts was the usual small corner shelf of split nibongs, and on this, a dove had built its nest, and hatched out its young. Unfortunately, though safe from wind and weather, the site was not rat proof; and when the young birds were ten days old, they were killed and partly eaten by those voracious pests of the padi-fields.

Geopelia striata striata (Linn.). The Barred Ground Dove.

Malay.—*merbok.*

The nest of this little dove consists of nothing more than a few intertwined twigs and rootlets. Smaller and flimsier than the last described, it is, in my experience, generally placed at a greater height.

The usual position is between eight and twenty feet from the ground, on top of a small lateral branch, although I found a nest in March, 1932 placed in a low coconut palm in the hollow at the junction of frond and stem: and this year, two nests in low bushes, only four feet from ground level.

I have found nests from November to May, and saw a bird carrying nesting material on 23rd May.

The eggs are white, oval, not glossy, and measure about .88 × .65 inches. Two are laid.

Amaurornis phoenicura chinensis (Bodd.). The White-breasted Water-hen.

Malay.—*ruak-ruak.*

I took a nest of this species on 24th March, 1932 on the edge of a small stream in the middle of a thick patch of lalang. The foundation of the nest was made by folding over and interlacing blades of green lalang to form a pad, which was supported also by thick grass which had grown up amongst the lalang. The nest was about three feet from ground level. The top of the pad, about six inches in diameter, was slightly depressed to receive the eggs, and lightly lined with dry lalang. The points of the blades of the surrounding lalang were eight to ten inches higher than the egg chamber, and effectually concealed the nest, which would probably never have been found had not the Japanese owner of the land decided to slash the undergrowth on the banks of the stream.

Another nest, found in February 1933, was similarly constructed, but placed in a rather more exposed position, quite close to a path, on the edge of a buffalo wallow, in lalang only a foot high. Two nests seen in May were better hidden, both being in the centre of thickets of *Melastoma*, lalang, and *Lygodium* creeper, about six feet from the ground. In each case the eggs were laid on a pad of dry lalang, which was supported by the surrounding green and decaying vegetation.

One clutch of four eggs, and one of three, were in an advanced state of incubation: the other nests each contained three eggs. The eggs are variable in size and shape. In the clutch of four, one, measuring 1.69 × 1.15 inches, was a long oval, pointed at both ends. Another, 1.55 × 1.12, was pointed at the end most heavily marked, blunt at the other. A third, 1.62 × 1.14, was a perfect oval: and the last, 1.55 × 1.14, a rather rounded oval. The average size of ten eggs is 1.55 × 1.11 inches.

The ground colour is pale buff, freckled and blotched all over with reddish brown, and with underlying markings of paler colour. The distribution, density, and boldness of the markings varies in different clutches. The shell is not at all glossy, and in some eggs has a slight greyish bloom.

Limnobaenus fuscus fuscus (Linn.). The Ruddy Crake.
Malay.—*sintar bras.*

Two nests of this species were found on 29th April, within a few yards of each other, in a thick growth of grass, lalang and rushes on the edge of a ditch. The land is flooded during most of the wet season.

The nest was well concealed, being about a foot from the ground in the centre of a tussock two and a half feet in height. It was a pad of dry grass, four inches in diameter and a little over an inch deep, the eggs being laid on a thin layer of dry lalang. Another nest, similar in all respects, was found on 15th May.

The bird, when disturbed, slipped off the nest and into the undergrowth like a rat. It was necessary to obtain it for purposes of identification, and it was eventually caught at night, on the nest, with a casting net.

One of the nests contained only one egg, another had a clutch of three, which, when blown, were found to be in varying

stages of incubation; and a third found at a later date had four eggs. The eggs are pale stone colour, lightly marked all over with small spots and blotches of reddish brown, and with underlying markings of pale purplish grey, the latter more thickly congregated at the larger end. Slightly pointed ovals, with very little gloss, they measured on average 1.23 × .9 inches, in one clutch, and in the other, 1.16 ×.89 inches.

Hypotaenidia striata (Linn.). The Blue-breasted Banded Rail.
Malay.—*sintar.*

Nests of this rail are found from November to May, and may frequently be come across by snipe shooters, as the nest is almost always situated in land where one may expect to find snipe.

On 2nd November, 1930 a nest was found in standing padi, and in December I found two nests close together, in tufts of grass on the edge of a padi-field. These three nests were raised nine to twelve inches above the ground, which was flooded at the time to a depth of six inches. A fourth nest, seen in May, was also raised a little above the ground, which was then quite dry: and a fifth, in January, was as usual placed in the centre of a grass tuft, but this time actually on the ground, on the bank of a small stream.

It would naturally be expected that *Hypotaenidia* would prefer to breed in the immediate vicinity of water, and in March this year I was greatly surprised to discover a nest, at least one hundred yards from the nearest ditch, and placed amongst short grass, on the hard sun baked clay of a rubber clearing; this was more remarkable because not far away was a considerable area of low-lying, swampy land, which, one would have thought, contained innumerable nesting sites more suitable than the one chosen.

The nest itself is merely a pad of dry grass, like that of *Limnobaenus,* but slightly larger and thicker. The clutch varies from four to six, it is probably only accidental that nests noted early in the season had generally four, occasionally five, and that the only nest I have seen with a clutch of six, was in May.

The eggs, rather rounded ovals, without gloss, are pale stone colour, boldly marked at the larger end with blotches of brown and chocolate, underlaid with purplish grey, and elsewhere more sparsely spotted with reddish brown. The average size of seven eggs is 1.26 × 1.06 inches.

The nestlings are clad in black down.

Butorides striata javanica (Horsf.). The Little Green Heron.
Malay.—*puchong bakau; puchong kĕlabu.*

Stretching along the coast for some miles, between the mud flats and a belt of rough secondary growth and kampong, is a strip of "hutan perepat", a mixed stand of trees of the mangrove class, "perepat" (*Sonneratia* sp.), "api api" (*Avicennia* sp.) and others. At high tide, the water is from knee to waist deep; at low water, the mud is exposed.

To one part of this "perepat" forest, round the mouth of a small creek, the little green herons come to build their nests. All my nests were found in an area of roughly four acres.

It seems probable that these birds nest twice a year. Eight nests were found between 23rd January and 16th February and between 8th June and 2nd August, six nests. No new nests were seen in March, April or May, through the area was visited on several occasions and nests of many other species were found.

The nest, which is a loosely constructed platform of small twigs, ten inches to a foot across and about two inches deep, may be placed at any height from eight to thirty feet above the mud, on a lateral branch. The usual clutch is three. The eggs are always very much coated with dried mud, but when this is removed, are seen to be a pale bluish green, and smooth in texture. Their shape varies from regular to broad oval, and measurements of eight average 1.51 × 1.11 inches. One egg measured 1.63 × 1.14; the others were all between 1.4 × 1.09 and 1.57 × 1.11 inches.

When the eggs are being brooded, the other parent is generally close at hand, often on a higher branch of the same tree. When disturbed from the nest, the brooding bird flies in a wide sweep and shortly returns, to sit crouched, bill pointing forwards, on a nearby branch; occasionally moving, in a stealthy, cat-like manner, the better to watch the intruder. While so occupied, it makes at intervals a clicking noise; the true note of alarm is a harsh, bark-like squawk.

The young birds are clad in grey down. Taken while still not fully fledged, and fed on a diet of small fish, they become very tame and confiding. A Malay kept three for some months, in a large roomy enclosure under his house. They were voracious feeders. Once, when the son of the house was chopping pieces of fish, one of the birds greedily snatched, just as the knife descended, and in consequence lost three quarters of an inch of its lower mandible; but it seemed none the worse for the accident and lived in as good condition as the others, till a prowling cat or "musang" got in one night, and killed all three.

So long as only one or two persons approached their cage, the birds were quiet; but when too much notice was taken of them, or when a dog or cat came near, they showed disapproval by raising their wings, partially erecting the crest, and uttering a kind of hiss.

I agree with Robinson as to the diurnal habit of this heron, at any rate on the coast. I have repeatedly watched birds feeding on the mudflats, often during the hottest hours of the day.

Cuncuma leucogaster (Gmel.). The White-bellied Sea-Eagle.

Malay.—*lang siput, lang laut.*

The huge nests of *Cuncuma* must be familiar to many people whose pleasure or duty has taken them to the quieter parts of the Malayan coast. Built in tall trees, and used year after year, the nests are extremely conspicuous. One seen on 7th February, sixty feet from the ground in a tall "perepat" tree, was four feet deep and six feet across, a huge pile of sticks. A roughly circular depression on the top of the nest was lined with "perepat" leaves, and thereon sat the two nestlings. The parent birds flew round and round in narrowing circles all the time my man was climbing the tree, calling loudly and swooping dangerously near as he reached the nest; but the young birds uttered no sound, merely gazing in wonder at this strange intruder from the outside world.

When the interruption was over, the parent birds signalised their relief by making an unprovoked attack on a pair of crows and a pair of Brahminy kites, driving them away with the maximum of noise and exertion.

While fishing off one of the Sembilan Islands early one morning in March, I watched two sea eagles at their nest, placed in a fork, six feet below the umbrella top of a tall tree. There were young birds in the nest, and their shrill screaming could be heard from some distance away, ceasing only when one of the parents returned to the nest with a fish, and later, a sea-snake.

Spizætus cirrhatus limnætus Horsf. The Changeable Hawk-Eagle.

Malay.—*lang borek, lang hindek.*

This fine bird also nests in tall trees, but the nests I have seen are much smaller than the gigantic structures made by *Cuncuma*. A nest seen on 20th April, eighty feet from the ground in a tall "ipil" tree (*Intsia* sp.) growing in a small patch of swampy jungle ten chains from the sea, contained a single juvenile, almost ready to fly. The egg-chamber of the nest was lined with green leaves.

The following year, on 20th January, the nest was again tenanted, and an egg was obtained. A broad oval, bluntly pointed at the smaller end, it measured 2.6 × 2.08 inches. The surface is chalky, the colour dirty white, with a few indistinct blurred marks of dull reddish brown. The inside of the shell has a strong sea-green tint when looked at through the blow-hole.

Haliastur indus intermedius Gurney. The Brahminy Kite.
Malay.—*lang tembikar.*

This is a coast-haunting bird, and breeds in the mangroves, usually in January, February, and March.

The nest, which is generally not less than forty or fifty feet from the ground, is a pile of sticks about two and a half feet in diameter, but only six to twelve inches in depth. The eggs are laid on a pad of dried clay, four to six inches across and about an inch thick.

A nest seen on 2nd February contained two eggs, just cracking. The parents, both of which were in attendance, perched on trees some distance away, and made no sound while the nest and eggs were being inspected.

The following year, on 2nd January, I took two eggs from another nest, not far from the first. They are round ovals, compressed at one end, measuring 2.09 × 1.62, and 2.05 × 1.60 inches. The shell is tough, the surface chalky and dirty white in ground colour, one egg very sparsely marked with small red-brown specks and scriggles, the other with quite a number of fine dots and lines, mostly congregated at the smaller end.

Like that of the last species, the egg shows green through the blow-hole.

Elanus cæruleus cæruleus (Desf.). The Black-winged Kite.
Malay.—*lang tikus.*

This graceful bird, which feeds mainly upon rats, may be seen hovering or quartering over an area of padi stubble.

Some years ago, in early June, a pair nested in the umbrella top of a tall solitary tree, on the edge of the padi fields, and brought out a single young bird.

This year on 21st February, in an abandoned holding, overgrown with lalang and scrub, I found a nest, eighteen feet from the ground in the leafy top of a young rubber tree, It was an untidy pile of sticks and twigs, twelve inches across by eight inches in total depth, the egg chamber being merely a depression, six inches in diameter by four inches in depth, and lined with smaller twigs.

It contained a single egg, a round oval, measuring 1.51 × 1.25 inches. The shell was glossless, creamy white in ground colour, heavily splashed and marked all over with varying shades of chocolate and brown: from their appearance, the markings might have been made by a carelessly applied paint brush. Like the eggs of other birds of prey, it showed green through the blow-hole.

It is interesting to note that on this occasion and also about three months later, when the second brood of two young birds was about to leave another nest close by, only one parent was in attendance. With the larger kites and eagles, I have noticed that both parents generally remain within calling distance of the nest.

Ninox scutulata malaccensis (Eyton). The Malay Hawk-owl
Malay.—*punggok.*

A pair of rollers (*Eurystomus orientalis,* Malay "tiong batu," "tiong kareh") had for some time been watched, entering and leaving a hole, thirty-five feet from the ground in a "perepat" tree. On 19th March, I went to the spot, and found both the rollers very agitated and noisy, perched on the branch of a tree nearby. I wished to obtain a specimen of *Eurystomus* in breeding plumage, and so shot the bird, a hen, which was later found to have eggs in the oviduct. On the ground immediately under the branch on which she had been sitting, we found a broken egg, freshly laid, which she had apparently dropped. Puzzled, I sent my man up the tree, and as he reached the nest hole, an owl (*Ninox*) flew out. There was one egg, laid on the dead wood at the bottom of the nest hole, which was a foot deep, and unlined. The entrance hole was too small to admit a hand, but the egg was removed by slightly widening another hole, lower down, which also led to the nest-chamber.

A fortnight later I returned to the tree, and found that the owl was sitting on two eggs, one of which I took, leaving the other, which was eventually hatched.

What must have happened was that the Rollers, which had for quite a long time been intending to use the hole for nesting, had at the critical moment been dispossessed of their home by the owls.

The eggs which were white, with very little gloss, measured 1.45 × 1.22 inches.

Another nest, similarly situated, was found on 5th May to contain a single young bird.

Alcedo atthis bengalensis (Gmel.). The Kingfisher.
Malay.—*pĕkaka kĕchil.*

A pair of these exquisite little birds had established territorial rights over the vicinity of a fish pond, from the teeming inhabitants of which they could select their daily meals with the maximum of convenience and the minimum of exertion.

They nested in a "live" white-ant hill near to the water's edge. The entrance was about one and a half inches in diameter, the tunnel itself only extending some six inches horizontally inwards, and widening, though not greatly so, to form the egg-chamber which had no lining except a few fragments of fish bone: at the back of the egg-chamber, which could be seen from outside, termites were moving about, at their ordinary occupations.

On 20th February, there were two eggs, which were found to be partly incubated: this shows that *Alcedo* occasionally lays a much smaller number of eggs than the clutch of five to seven with which it is credited in other parts of its range.

The eggs were elliptical ovals, very slightly compressed at one end: white, glossy, and with a rather delicate shell. They measured .87 × .68, and .85 × .66 inches.

Halcyon smyrnensis fusca (Bodd.). The White-breasted Kingfisher.

Malay.—*pĕkaka.*

The nest of this kingfisher may be found from February to May, and consists of a tunnel, fifteen inches to two feet in length, excavated horizontally in the bank of a drain, or well, and generally only nine inches to a foot below ground surface.

I have seen nest tunnels in all sorts of soil, from light sand to stiff, unyielding clay. The entrance is just too small to admit one's hand, but the tunnel broadens at the end into an egg-chamber, usually about nine inches in diameter by five inches in height. On the floor of the chamber there are almost always a few small fish bones, or the wing and leg-cases of a species of coppery beetle. These are apparently the fragments of meals eaten by the brooding bird, as they are found while she is still sitting on eggs.

The full clutch seems to be five, but I have found numerous nests containing only four. The eggs are white, glossy and translucent, and the yolk is a deep orang colour. Broad ovals, the eggs measure about 1.16 × 1.02 inches (average of eleven).

As the nestlings grow up they become extremely noisy, and attention is attracted to the nest by their squeaking. They are ugly little things; each feather is enclosed in a sheath, which gives the young birds a peculiar spiny appearance. The process of extracting a nestling, for examination, is unpleasant in the extreme; the tunnel, and the bank below its opening, are always in a filthy condition.

Halcyon chloris humii Sharpe. The White-collared Kingfisher.

Malay.—*raja udang.*

Halcyon s. fusca is normally a garden and kampong bird, not usually found in the mangroves. This species, on the other hand, is never, or at least very rarely seen away from the coast, where it is a conspicuous bird, being even noisier than the last.

The nesting season extends from January to August.

On 10th February, I found a nest containing three young birds. This was a tunnel, three feet long, excavated in the soft earth at the roots of a fallen coconut tree, on the shore.

On 23rd March, a nest, also containing three nestlings, was found in a hole, about nine inches long, in a "live" white ants' nest which had been built up round the base of a thorny palm, in scrub just above high-water mark.

With these two exceptions, all the nests I have seen have been in holes in trees. A "perepat" tree, the heart-wood of which has rotted, is the favourite site. The entrance hole is small, but inside the bird excavates a nest-chamber, which it uses quite unlined, the eggs being laid on the soft decaying wood. The distance from the entrance to the back of the chamber is often only six inches, never more than a foot. Frequently the floor of the chamber is several inches lower than the entrance hole, but this seems to vary according to the condition of the wood inside the tree, and whenever possible the bird tries, I think, to save itself the trouble of doing any more excavation than is necessary.

The great majority of nests are from six to ten feet above the mud, which means one to five feet above water level at high tide, but I have seen two nests no less than thirty feet up the trees.

The eggs are white, somewhat glossy, and faintly translucent. Generally they are broad ovals, sometimes slightly pointed at one end, and eggs of this type average 1.14 × .96 inches. Three eggs in one clutch, however, were longer ovals slightly pointed at both ends, and averaged 1.21 × .98 inches. In the nest the eggs are usually coated with dried mud, no doubt from the feet of the brooding bird. The clutch is almost always three but very occasionally only two eggs are laid.

Ramphalcyon capensis malaccensis (Sharpe). The Stork-billed Kingfisher.

Malay.—*pĕkaka bĕsar.*

A nest of this, the largest of local kingfishers, was found on 27th March, about fifty yards from the bank of a small river.

It was excavated in the base of a white-ant hill, the entrance hole being nearly four inches in diameter. The tunnel, only six or eight inches long, led to a spacious egg-chamber nearly a foot in diameter.

Attention had been attracted to the nest by the behaviour of the parent bird, which was noticed swooping down from a tree into the short lalang, and immediately returning to its vantage point, this proceeding being repeated several times.

On investigation the nest was found to contain a dead nestling, which the red ants were trying to remove, and an addled egg. The floor of the egg chamber was covered with fish-bones, the wing-cases of beetles, and small fish in varying stages of decay.

The egg was white, glossy, a short, regular oval, measuring 1.48 × 1.11 inches.

Anthracoceros coronatus convexus (Temm.). The Southern Pied Hornbill.

Malay.—*lang ling.*

In a small area of swampy jungle, near the coast, at the foot of a large "nyireh" tree *(Carapa moluccana)* my ranger noticed the feather of a hornbill. Thinking there might be a nest near at hand, he withdrew about thirty yards, and sat down to watch. Before very long his intelligence was rewarded by the sight of the male hornbill, which arrived with a berry of some kind, and perching on the side of the "nyireh" trunk like a woodpecker, proceeded to feed the sitting bird through the slit in the nest wall.

The next day, 9th March, I went to see the nest. Although it was only eighteen feet from the ground, its existence would never have been suspected but for the lucky accident of the day before. As is well known, it is the habit of hornbills to plaster up the entrance to the nest-hole once the hen bird is inside, with a substance resembling dry mud or clay. In this case, the opening left to provide the bird with air and food was a mere slit, two and a half by one and a half inches in size.

The eggs had newly hatched. On the first day, when the ranger climbed up to the nest, there had been no sound except a slight protest from the parent; on the 9th, the squeaking of the two young birds could be plainly heard. The opening was widened, slightly, with a parang. The mother bird became extremely noisy, and the vicious stabs she made at the point of the parang left no doubt as to the reception she would be likely to give to any prowling arboreal mammal or reptile.

A day or two later, when I next visited the nest, the opening had been plastered up again to its original size. I have no record of the date on which the mother and young birds left the nest, but they were still in residence on 9th April, a full month after hatching.

I have been informed by Malays that the same nest hole is used year after year: one old worthy told me of a tree in which, until it was blown down by a gale, hornbills had nested, within his recollection, for twenty years. Be that as it may, in January of the following year I took an egg from the nest described above.

It seems that the hen hornbill is immured some days before she is actually due to lay. I had reliable information that she was in, and plastered up, on 17th January. I did not visit the nest till the 24th to make sure of finding the full clutch, but the single egg then obtained was quite fresh.

Measuring 1.7 ×1.42 inches, it was almost equally rounded at both ends, close in texture, and quite without gloss. Dirty white in colour, it was much stained by the juice of some large purple berries on which the bird had been feeding, and the remains of which, together with some small slivers of decaying wood, were the only lining to the nest.

I was surprised to find that the parent, which the year before had been most noisy in defence of her offspring, on this occasion allowed the egg to be removed without uttering a sound, although, to begin with, she certainly attempted to make full use of her formidable bill.

Merops viridis viridis Linn. The Chestnut-headed Bee-eater.

Malay.—*bĕrek bĕrek.*

Most observers seem to have noted this species as nesting in precipitous sandy banks. This is no doubt its habit in places where such a site is obtainable, but here, where there are no such banks, colonies of birds make their nest burrows in flat sandy areas. These burrows are generally over three feet in length. I opened up one, which the bird was just finishing, which measured six feet from entrance to egg-chamber; it sloped gently from ground level to two feet below the surface, the slope flattening out just before the egg-chamber was reached.

Nesting takes place generally in April and May, and the same sites are used year after year, though of course the actual burrows have to be dug out afresh each season. I have found eggs as late as 9th July, but this is exceptional. Quite often stray eggs may be picked up from the ground near the entrance to the burrow.

The clutch varies. Five is the greatest number of eggs I have seen, but in April, 1932 I took a clutch of three partly incubated eggs, and have since seen several nests, the full clutch of which was three or four. The eggs are rather rounded, and are laid on the bare floor of the nest-chamber. When taken from the nest they have a greyish appearance due to the sand particles with which they are covered, but when washed they are white and slightly glossy.

They vary somewhat in size: the average of eleven normal eggs is .91 × .8 inches, but I have one egg measuring .99 × .82, and a clutch of three which average only .84 × .76 inches.

After the nesting season is over, *Merops viridis* leaves the district, and its place is taken, from August onwards, by the Brown-throated Bee-eater (*Merops superciliosus javanicus*) which species disappears, in its turn, before *M. viridis* returns to breed in the spring.

Caprimulgus macrourus bimaculatus Peale. The Long-tailed Nightjar.

Malay.—*burong tukang; burong sĕgan.*

This bird, whose monotonously reiterated call is disagreeably familiar to most Europeans in Malaya, breeds from January to

April. It lays two eggs, regular ovals, which measure generally about 1.18 × .88 inches. Quite frequently, however, eggs in the same clutch will be found to differ appreciably in size. The largest egg of which I have a record measured 1.37 × .87 inches.

The ground colour is pinkish buff, sparsely spotted and blotched with darker buff, and sometimes with pale purplish brown, or purplish grey, the latter markings being often congregated near one end of the egg. I have one egg with an irregularly shaped splash of chestnut-brown, from an eighth to a quarter of an inch in width, running diagonally for three quarters of the length of the egg: elsewhere there are hardly any spots at all.

No nest is made, the eggs being laid on the bare ground, or on sand, usually in the shade of a low tree, bush, or palm, and amongst fallen leaves, in which position their colouring tones so well with the surroundings that it is often difficult to spot them at first glance, even though the sitting bird has been seen to rise.

When the eggs are near to hatching, the bird sits very close. I have sometimes approached to within two or three feet of a sitting bird, without its moving in the slightest degree. In such a case, I have noticed that the bird closes its eyes, no doubt lest their reflected light should draw attention to its presence. When disturbed, one bird left her eggs with an upward jump, and, after two or three wing flaps, came down again a few feet away, body pressed close to the ground, and wings extended. Making a loud hissing noise, it violently agitated its pinions, and, in fact, the feathers of the back and mantle seemed also to be raised and trembling. After a moment, it retreated another ten yards, and repeated the process. Finally, it took up its position on a low branch thirty yards from me, and remained so until I had gone, leaving it to complete an incubation which was almost at an end, for from the eggs, which I did not touch, could be heard the faint cheepings of the young birds.

If, as often happens, the eggs have been laid in an exposed position, such as among the fallen leaves of a rubber estate, the bird sometimes moves her nestlings, soon after hatching, to a place of greater security—the lalang edge, or the shelter of some scrub.

My attention was first directed to this peculiarity some time ago. I was anxious, if possible, to obtain the eggs of *Lyncornis*, the eared nightjar, and I had been making enquiries in a locality where that species is comparatively numerous. A Malay found a *Caprimulgus* nest. Like a number of other people, he had an idea that the *tap-ti-bau*, when his aerial antics are over descends to lower levels and changes his note to the *tock-tock* of *Caprimulgus;* so he caught the bird, on the nest, and brought it, and the eggs, a distance of about five miles, by bicycle.

The eggs were nearly hatched, one of them having already cracked. The bird was quite unharmed, so I decided to try whether she would complete the incubation. One end of the vegetable garden was lying fallow, and grown up in weeds and small plants. Near this, under a low shady tree, I placed the eggs, and was delighted to find that the bird, when gently settled on them, immediately commenced to brood.

That was in the evening. At seven-thirty, seen by the light of a torch, she was still brooding. In the morning there was only one egg. I went out, and did not return till after ten, when my servant told me that, at seven, the bird had been back at the nest. I went to look, but both egg and bird had disappeared. Any interference by dog, cat, or human could be ruled out, and I was inclined to the belief that she had moved her nestlings soon after they hatched.

Since then, I have definite proof that one brood moved at least twenty yards the day after hatching, and another, about the same distance, probably on the second day. I saw a fledgling, which had grown to about bulbul-size, follow its mother, whom I had disturbed, by shuffling itself along the ground, pushing, it seemed, with its partly feathered wings: but how are the very young nestlings transported to a more secluded spot?

In a note, published in the Singapore Naturalist (1923), Mr. C. J. Saunders mentions having heard a nightjar call by daylight in April, 1918, April, 1919, and at about the same time of year in 1922. Towards the end of April this year, two young nightjars took flight from a nest not far from my house. From 30th April, to 7th May, I heard nightjars calling by day, at 11 a.m., 2 p.m., and in the afternoon. From the dates recorded, I suggest that the day time calling is either communication between parent and youngster, or an inexperienced effort on the part of the young bird itself.

Micropus affinis subfurcatus Blyth. The Malay House Swift.
Malay.—*layang layang.*

The nests of this swift must be familiar to everyone, so common is it in the towns, and so frequently seen at country bungalows, where its attempts at housekeeping have not been frustrated by an intolerant human host.

Plastered against walls and under verandahs, they are added to and repaired year after year. Robinson mentions the species as breeding on lofty cliffs, and I have found their nests under a concrete jetty: their choice of a nesting site is therefore not always limited to human habitations, as is believed by some.

The eggs are usually two, sometimes one, or three; generally they are long and pointed, but occasionally specimens are typically "egg shaped.". The average size of a dozen eggs is .91 × .60 inches, but they vary considerably from .87 to .98 in length, and from .57 to .64 in breadth. The colour of the shell is dull white, without gloss. Quite fresh eggs may be faintly translucent.

I think that two broods are raised. In some nests which I observed, breeding took place in March and April, and all the young birds had flown by the middle of May. Early in July, many of the nests again contained newly hatched nestlings.

It is perhaps of interest to note that a breeding colony of swifts, and a hive of wild bees, have lived for months under the same verandah, neither interfering with the other, and the bees showing no displeasure even when swifts continually dash in and out within inches of the hive.

Centropus bengalensis javanicus (Dumont). The Lesser Crow-Pheasant.

Malay.—*but-but.*

A nest of this species was found on 13th January, in thick lalang on the edge of a patch of scrub. Three feet from the ground, it was a domed structure, ten inches in height by nine inches in outside diameter, made entirely of dry lalang, loosely woven, and attached to the living grass, some blades of which were bent over and woven into the dome. At one side an oval entrance, five inches by four, led to the egg-chamber, the floor of which was lined with half a dozen green leaves of a creeper which grew nearby. The two chalky white eggs, which were very much incubated, measured 1.16 × 1.04 inches. A clutch seen the following year, on 1st January, also consisted of two eggs. One of these had a very chalky surface; the other was quite smooth, and when collected, had a slight gloss, which it has now lost. They were rather longer ovals than those described above, and measured 1.24 × .89 and 1.22 × .92, respectively.

On 24th February a nest was found, which contained a single nestling. A repulsive little object, it was quite black, with enormous feet. Its feathers were still in sheath, and the head and upper parts covered with white bristly hairs, about an inch and a quarter long.

The "but-but" has a bad reputation as an egg thief, and is also said to eat nestlings of smaller birds, bulbuls, munias etc. I have no personal evidence of this, but see no reason to doubt my informants.

Phœnicophaus curvirostris erythrognathus (Bp.). The Malay Chestnut-breasted Malkoha.

Malay.—*chĕnok.*

In a patch of scrub, near the sea on 15th January, 1932 I found a nest which was situated ten feet from the ground, in a short shrubby tree. It was a loosely built structure of sticks, and the egg-chamber consisted merely of a depression in the top of the nest, smaller twigs being used for its lining.

The nest contained three young birds, fat, black-skinned, with greedy gaping mouths, the insides of which were a bright red.

Dryobates moluccensis moluccensis (Gmel.). The Lesser Pigmy Woodpecker.

Malay.—*bĕlatok kĕchil; bĕlatok pĕrĕpat.*

This small woodpecker is by no means uncommon in the "perepat" forest. I have not come across it more than a mile from the sea.

Its nesting period extends from March to July. The nest is a hole in very soft dead wood. A favourite site is the extreme end of a dead horizontal branch, in which case the entrance hole is generally on the underside. The opening is about one and half inches in diameter, and circular; the chamber extends inwards from six inches to a foot, either horizontally or downwards.

I have seen nests at heights varying from twelve to sixty feet above mud level. Some of them were quite impossible to obtain.

Three eggs, taken on 30th March, were white, translucent, rather glossy, and pointed at one end: two taken on 8th June were round ovals. The size varies from .69 × .52 to .75 × .53 inches. The normal clutch appears to be two, as I saw nests on 21st March and 15th July, each containing two nestlings.

Dinopium javanense javanense (Ljungh). The Golden-backed Three-toed Woodpecker.

Malay.—*bĕlatok kampong.*

This bird is by far the best known of Malayan woodpeckers, being common in garden and kampong areas. It does not as a rule frequent the mangroves.

The nesting season extends from January to July. The eggs, which are always three in number, are laid on decayed wood inside the trunk of a tree, the entrance hole being cut from outside by the bird. The nest-hole is generally fairly deep, in most cases about twelve inches. A dead or dying coconut tree is the favourite site, but any tree with soft wood will do, and I have seen a nest in a dead horse-mango tree *(Magnifera foetida)*, a living "cashew" tree *(Anacardium occidentale)*, and a decaying rubber branch. Most of my nests have been eighteen to twenty feet from the ground; but the only one I have seen in the mangroves was in a dead "perepat" tree, only six feet above ground level.

Three eggs taken on 24th February were, when I found the nest, being brooded by the male bird. They were white, somewhat translucent, rather glossy, and round-oval in shape, and averaged .90 × .75 inches.

On 15th March, I took another clutch of three eggs; this time the female was on the nest. The eggs were long, pointed at one end, and their average size was 1.03 × .71 inches. One egg was highly translucent, and the yolk showing through the shell gave the egg a beautiful pinkish blush. This egg was just beginning to incubate. The others, which were not translucent, were at different stages of incubation, both further advanced than the first egg.

Woodpeckers do not catch insects on the wing; but on occasion, the presence of a swarm of flying termites tempts them to the performance of aerial acrobatics quite foreign to their natural habit. I have seen this happen once or twice, notably one evening in June, 1930, while waiting for a flight of green pigeon. Bee-eaters, swallows, and swifts were flying round and round amongst the swarm, and three Golden-backed Woodpeckers joined them. Their attempts to hover were most amusing. Head and tail thrust forwards, wings beating furiously, they managed, for thirty seconds at a time, to maintain themselves in this curious position, as though sitting on the air. Each time the strain became too great, they flew in a wide circle, and, when refreshed, returned to the feast. This went on for quite ten minutes, till the swarm had finished.

Picus vittatus vittatus (Viell.). The Bamboo Green Woodpecker.

Malay.—*bĕlatok hijau.*

This species is much less common than the last, and has not, I understand, previously been recorded from north of Selangor. A pair lived in my garden for a year or two, leaving at intervals, for two or three months at a time, I suppose to breed.

In March, there were two nests, thirty feet from the ground, in dead coconut trees, both quite unclimbable; one, in fact, fell in a gale before the eggs were hatched.

On 16th April, I found a nest in a hog-plum tree, about twelve feet from the ground. There were four eggs, quite fresh. Translucent, pinky white when unblown, they were pointed ovals, fairly glossy, and averaged 1.04 × .75 inches.

The eggs of a clutch taken from a hole in a dead mango tree, on 3rd March of the following year, were somewhat larger, and not so sharply pointed at the smaller end. Their average

measurement was 1.08 × .83 inches. I have a record of another nest, seen on 5th April, in an "api-api' tree, on the edge of the mangroves.

In "The Birds of Singapore Island", it is stated that specimens of this species, brought into the Raffles Museum, had the underparts sullied with mud, suggesting that the birds had spent some time on the ground. That this is at times their habit is corroborated by the fact that I have on several occasions watched a pair on the ground, where they appeared to be searching for small insects among the fallen leaves, in a rubber estate.

Micropternus brachyurus squamigularis (Sundev.). The Malay Rufous Woodpecker.

Malay.—*bĕlatok.*

This woodpecker is by no means common here, and when seen, is generally in kampong country, in pairs.

It was somewhat surprising to find it nesting, about the middle of April, in the coastal scrub, an area covered with a dense growth of "piyai" and "bogin" (*Phoenix paludosa*, a relative of the date-palm). In the stem of a dead "bogin", about fifteen feet from the ground, it had excavated its nest hole, three inches in diameter at the entrance, the egg-chamber being about six inches in depth.

The eggs have a fairly tough shell. Two in number, they were beginning to incubate. White, not glossy, they are oval, almost equally rounded at both ends, and measure .95 × .70 and .96 × .71 inches.

Callolophus miniaceus malaccensis (Lath.). The Malayan Banded Red Woodpecker.

Malay.—*bĕlatok.*

This very handsome and, locally, extremely uncommon species was found breeding in the mangrove belt on 20th June. The nest was a small hole, excavated in the dead wood of a "perepat" tree, about sixteen feet from the ground.

There were three eggs, which were fresh, and translucent when unblown. Their shape was oval, slightly compressed at one end. The shell was white, glossy, and fairly tough. They measured 1.05, 1.07 and 1.08 in length, and a uniform .8 inches in breadth.

Xantholæma hæmacephala indica (Lath.). The Coppersmith Barbet.

Malay.—*burong tukang bĕsi.*

A nest of this species, found on 10th May, contained a single nestling. The nest was a hole bored horizontally into a "perepat" tree, about twenty feet from the ground, and had no lining. Another nest, seen on 13th April the following year, was a hole in a rubber tree, about sixteen feet from ground level. This time there were two young birds.

Cymbirhynchus macrorhynchus malaccensis Salvad. The Black and Red Broadbill.

Malay.—*burong hujan hujan.*

Although it is said that this bird, in Malaya, does not frequent gardens and orchards, I find that it occasionally does so. In May this year I saw a nest, which, despite the efforts of the parents, was robbed by squirrels: this was attached to the end of a branch, about sixteen feet from the ground, in a garden bordered by a small strip of reserve jungle. Another nest was attached to the end of a Casuarina branch, in a garden bordering a mangrove swamp.

Three nests of the species were seen in April and May, 1932, in "perepat" trees. In each case the nest was attached to the extreme end of a lateral branch, at heights above the mud varying from twenty to thirty-five feet. The nest, which looks like a bunch of flood-debris, is a large untidy oval structure of roots, rootlets and twigs, interwoven with a quantity of fibrous material (dried bark). The one nest which I examined closely was eighteen inches from top to bottom, the top six inches being a sort of canopy, built loosely round the twig to which the nest was attached, the end of which, with green leaves still growing on it, struck out sideways through the top of the main body of the nest proper. The outside circumference of the nest, at the widest part, was no less than twenty-six inches.

A circular entrance hole, two inches in diameter, was placed centrally on one side, and protected by an eave. The egg-chamber was neatly lined with strips of bark taken from saplings of "baru" *(Hibiscus tiliaceus);* and three eggs were laid on a few green leaves of the "ara" (*Ficus* sp.).

Rather long ovals, not glossy, the eggs measured an average of 1.08 by .75 inches. The ground colour was pinkly white spotted all over with brown, most heavily at the larger end, where there were also some underlying markings of paler colour.

Hirundo javanica abbotti (Oberh.). The Malay Coast Swallow.

Malay.—*layang layang.*

The nest of this little swallow is a saucer of mud and straw, lined with feathers. Sometimes it may be found attached to the wall of a house, on top of a beam, or under an eave. In 1926, a pair of birds built on my bedroom verandah, starting the nest on 20th February, and finishing it on 10th March. Four eggs were laid but only two hatched, on 1st April. The young birds left the nest on 23rd April. The parents never got used to my presence, and after the eggs had hatched, became a positive nuisance, screaming and swooping round my head every time I came near the nest.

On 17th May the same, or another pair, returned to the nest, and after cleaning it up, commenced to lay on 21st May. Again four eggs were laid, and three hatched out. The following year, and the year after, swallows attempted to start building in my bungalow, but both times they were driven away by swifts (*Micropus affinis subfurcatus*); a "dog in the manger" action, for after the swallows had gone, the swifts themselves decided against my house as a nesting site, and went elsewhere.

More frequently nests will be found over water attached to the underside of a bridge, or jetty; and the same site is used year after year. This year, on 17th April, I noticed what at first I thought to be a single swallow, fallen into the river, and fluttering, unable to rise from the water: but it turned out to be a pair, engaged in mating. On 22nd May, there were several nests together, under the jetty, all with three eggs, except one, which had only two; all the eggs were near to hatching. More nests, each with a clutch of three, were seen in the middle of June.

The eggs are pear-shaped, slightly glossy, and very fragile. The ground colour is white, sometimes with a faint tinge of pink when unblown: they are spotted all over with brown and chocolate, the spots thickening to a ring at the larger end, where there are also some greyish undermarkings. The average size of seven is .69 × .51 inches.

Hypothymis azurea prophata Oberh. The Black-naped Flycatcher.

Malay.—*name unascertained.*

A nest of this species was found on 19th April, situated forty feet from the ground, in the fork of a twig on one of the outer branches of a rubber tree, on the bank of a large main drain.

A deep cup, two and a half inches in total depth, and two and a quarter in outside diameter at the top, it was constructed of thin strips of some kind of bark, a few of which were left hanging, below the base of the nest. The outside of the nest was compacted and bound to the supporting twigs by cobwebs, and decorated with green moss. The egg chamber, which measured 1.7 inches in diameter at the top, by an inch and a half in depth, was lined with fine coconut fibre, and contained two slightly incubated eggs, measuring uniformly .68 × .52 inches. Only slightly glossy, rather pointed ovals, their ground colour is a warm cream, spotted with light reddish brown, and with some underlying spots of grey. Almost all the markings are congregated in a zone at the larger end of the egg.

Rhipidura javanica javanica (Sparrm.). The Malaysian Fan-tail Flycatcher.

Malay name.—Robinson gives *"merbok gila"*, and translates it as "mad thrush", which is obviously an error, because "merbok" means a ground dove, not a thrush. "Merbah gila" might be meant, but "merbah" is a word applied generally to brown birds of the bulbul and babbler types, and does not fit *Rhipidura* at all. I have heard it called *"Murai gila"*, by Malays, but in the local kampongs, it is best known by the name *"empak empak"* (see Wilkinson's new dictionary, Vol. 1, p. 300—"empak-empak", a bird, unidentified.)

It nests from February to June, but the greatest number of nests are found in February and March.

All the nests I have seen were between four and fifteen feet from the ground; most of them in small trees, in gardens and kampongs, two in bamboo clumps, and two in the mangroves, within a few yards of high water mark. In every case the architecture was the same. A strong tightly woven base is made round a forked twig, both legs of the fork passing through the base. On top of this is built a small cup, approximately two and a quarter inches in outside diameter at the top, the wall being a quarter of an inch thick, the egg-chamber an inch and a quarter deep, and the whole nest from rim to base only just over two inches. The materials used are dry bamboo leaves and fine fibre, with sometimes a little decayed wood interwoven in the base. The outside is very neatly compacted with cobwebs, the junction between base and nest proper being quite imperceptible. Sometimes, but by no means always, a few strands of dry bamboo leaf or other material are allowed to hang down like a tail, from the bottom of the nest. The egg-chamber is lined with fine fibre.

The eggs are always two in number, rather pointed ovals, without gloss, yellowish or greyish white, with greyish specks and blotches, mostly congregated in a zone near the larger end of the egg, and generally either sparsely distributed or absent elsewhere. My eggs measure, on average, .69 × .52 inches.

Rhipidura, which is a restless, fussy little bird at any time, is an extremely watchful and anxious parent. When disturbed on the nest, it never goes far away, and particularly when there are nestlings, is incredibly bold, often perching only a yard from the head of the intruder, and keeping up a constant protesting chorus of harsh grating chirps.

A pair which, after much difficulty, succeeded in raising a brood in my garden, made possible the observation of some details, which it may be of interest to record. They nested first of all in a lime tree, which was swarming with red ants *(Oecophylla smaragdina)*. The second egg was laid on 13th February: and the young birds hatched out on the 28th, an incubation period of fifteen days. They did not long survive. On 20th March the second clutch of two eggs was ready, and they were hatched on 5th April. On the 9th, I found the young birds dead, nest and corpses smothered in ants, and the parents perched on nearby twigs, very noisy and agitated.

This second misfortune caused the flycatchers to forsake the lime tree as a nesting site, and they began to build another nest fifteen yards from the first, on the slender twig of a thorny shrub, "bulang" (*Canthium* sp.). I saw two eggs, on 15th May, and again on the 16th and 17th. That night I woke, about midnight, and while I stood on my verandah heard the birds suddenly start an outcry, which lasted for a moment or two; then silence again. In the morning the eggs were gone: I can only conclude that it was the work of a tree-snake, for I can think of nothing else that could have reached the nest, so slender was the twig on which it was built.

On 26th May, there was again an egg in the nest: on the 27th, another. The first nestling hatched about 7 a.m. on 11th June, the second some three hours later. By now, the welfare of the birds and their family had become a personal matter, and it was with anxiety and later, pleasure that I watched the growth of the little creatures. Born naked but for some buffy down on head, shoulders and back, the eyes began to open and the wing quills to sprout on the fourth day. The next day quills appeared on the crown and down the back: the day after, on the tail: on the 18th the youngsters nearly filled the nest, and the tips of the wing feathers began to show. By the 21st they were well feathered and showed the white line over the eye: on the 22nd the feathers of the tail, though very short, began to fan. The nest was by now beginning to cant under their weight but happily the architecture was good, and it held firm. Until the 24th, the fledglings did not take the slightest notice when I approached the nest. The edge of their bill was pale yellow, but they must have been well fed and cared for, for I never saw them with open hungry gape, like other nestlings. On the 24th and 25th, they watched the world with keen and questioning eye: and on the morning of the 26th, fifteen days after hatching, they stood upright in the nest, tried their wings, and later in the day took their first feeble flight.

Quite apart from the value of the information gained regarding the time-table of *Rhipidura's* period of incubation, growth and development, I found the collection of these details of absorbing interest, as providing a concrete case indicating the extraordinary power of the reproductive instinct. That so small a bird, having lost two broods in one nest, and one in the second, should yet again set about the business of reproduction, and, at long last, launch into the world her family, seems to me a set of circumstances which gives much food for thought, not only because of the persistence of the little creatures, but because of the wonderful provision of Nature which makes such persistence not only possible, but a natural instinct of the avian mind.

Gerygone fusca sulphurea Wall. The Sulphur-breasted Mangrove Flycatcher.

Malay name not known, except vaguely as *"kĕlichap pĕrĕpat"*, which also is used in referring to white-eyes, some sunbirds, and, in fact, any bird of "kelichap" size found in such localities.

This little flycatcher, elsewhere rather uncommon, is found in considerable numbers in the "perepat" swamps on the coast near the Dindings-Perak south boundary.

I have found nests in every month from December till August inclusive, all on overhanging branches of "perepat" and "api-api" trees, at from five to twenty feet from the ground. Several nests were attached to trees right on the edge of the mangrove swamp, exposed to all the winds blowing in from the sea.

The nest is most peculiar. It is shaped like that of some kinds of sunbird; a pear-shaped bag, firmly bound at the top to a horizontal twig, and with a long "tail" pendent beneath the nest. The entrance, which is small, circular, and furnished with an eave, is about half-way down one side of the nest. From the supporting twig to the bottom of the nest is about four and a quarter inches, and the tail, which not infrequently is gathered and bound fairly tightly at the base, may be six inches or more in length.

The main materials used are fine fibre, tiny rootlets and various kinds of vegetable down; the egg-chamber is lined with the softest of down, and attached to its inner walls are sometimes found the breast feathers of birds: one nest was lined throughout with the breast feathers of green pigeons. The outside of the nest is decorated all over with green moss, skeleton leaves, slivers of dry rotting wood, and the white scales of some kind of sea creature. Eggs, two or three, slightly pointed ovals, without gloss, measuring on an average .60 × .43 inches. White or pinky white in ground colour, they are profusely marked all over with small spots of reddish brown, more thickly congregated at the larger end, where also are a few fine writing marks of very dark brown, almost black.

In March, I found in one nest a single egg of *Gerygone* as described above, and also an egg, .72 × .51 inches, dark olive green with a single brown blotch at the larger end, and also a zone of very tiny dark brown spots. This was probably the egg of a small cuckoo.

The nestling of *Gerygone,* when very young, is a queer little creature, clad in fine, white, hair-like feathers, which make it look like some kind of caterpillar.

Like *Rhipidura, Gerygone* is a watchful mother and often comes very near when one is examining the nest.

Lalage nigra nigra Forst. The Pied Cuckoo-Shrike.
Malay.—*Murai batu.*

In this district, *Lalage* is found in gardens, kampong country, and in the mangroves.

I have found nests from February to June, a few on dry land, in mango or other fruit trees, and more on the coast, in the "perepat" forest. The nest is generally built in the fork of a small outer branch, and may be from twelve to thirty feet from the ground. It is a shallow saucer of coconut fibre, sometimes with a few fragments of dead leaves woven into the outside, which is covered with cobweb, this material also being used to bind the nest to the twigs on which it rests. The nest is small, only two and a half inches in outside diameter, with an egg chamber not more than half an inch deep; the head and tail of the brooding bird can be seen from below.

The eggs, two in number, are blunt ovals, not glossy. They are very pale green, profusely blotched all over with brown, and with underlying markings of pale purplish grey. Scattered over the surface are a number of small very dark brown specks, and one egg has, at the larger end, two or three fine writing marks of the same colour. The shell is exceedingly fragile. The eggs measure about .85 × .6 inches.

Pycnonotus goiaver analis (Horsf). The Yellow-vented bulbul
Malay.—*mĕrbah kampong.*

This bird is extremely common, and its nest may be found in most gardens. It is a cup, about two and three quarter inches deep by four inches in diameter (outside measurements), made externally of bamboo and other leaves, tendrils, fibre, and occasionally small pieces of newspaper; and lined neatly, with fibre. It may be placed in hedges, bushes, the lower branches of small trees, or even in a thick tuft of lalang, at from two to twelve feet from the ground; and the nesting season here extends from January till June. The eggs, which are pinkish in ground colour, very variably marked with purplish brown and purplish grey, have an extremely fragile shell, smooth, not very glossy. The average size of a dozen eggs is .84 × .62 inches. I have not seen more than two in a clutch.

A nest built on top of a palm frond, just outside a bungalow verandah, was occupied three times in the early part of this year in January, February–March and April, though whether by the same or a different pair of birds I am unable to say.

I mentioned earlier in this paper a case of two Black and Red Broadbills, which, in spite of their comparatively large size and sturdy build, were unable to prevent the spoliation of their nest by a marauding squirrel. The bulbuls which laid the second of the above mentioned clutches were more successful. Not long before the eggs were due to hatch, a squirrel was seen approaching the nest. Both birds attacked him with such organised violence that he was driven in confusion to the shelter of a leafy tree. Not content with this, the birds kept up a furious chattering, and as soon as the squirrel, by a slight movement, betrayed his hiding place amongst the foliage, they again set upon him, and did not cease their pursuit till he had been driven right away from the vicinity of the nest.

Pycnonotus plumosus plumosus Blyth. The large Olive Bulbul

Malay.—*mĕrbah hutan.*

This bulbul is not nearly so common as the last, and is of a more retiring habit. The nest, which is slightly larger and deeper than that of *P.g. analis,* is of the same type, and those I have seen were placed in low bushes, amongst the undergrowth of deserted rubber holdings, from January to June. The two eggs, averaging .88 × .66 inches, vary somewhat in shape and markings, but generally resemble those of the last species.

Aegithina tiphia subsp. The Common Iora.

Malay.—*kĕlichap kunyet.*

I have seen nests of this species in May and June. Placed on a forked twig, on one of the outermost branches of a "perepat" tree, about twenty feet from the ground, the nest is a neat cup, measuring internally two inches across by about one and a half inches deep, with walls a quarter of an inch thick, made of very fine fibre, and compacted on the outside with cobwebs, which also bind it to the twigs on which it rests.

In a nest taken on 20th May there were two eggs, one almost fresh, the other slightly more incubated. Rather pointed ovals, only slightly glossy, their ground colour was creamy white, with a faint pinkish tinge. Both eggs were boldly marked at the larger end with longitudinal stripes of reddish brown and purplish grey. One had a number of small specks and a few blotches of reddish brown over the rest of its surface; the other was very sparsely marked. They measured .75 × .51 inches.

Mixornis gularis pileata Blyth. The Malay Yellow-breasted Babbler.

Malay.—*mĕrbah bimbang.*

The local Malay name, "merbah bimbang", well describes the habit of this little bird. "Bimbang" is defined as meaning "anxious, uncertain, irresolute, nervous;" and anyone who has watched *Mixornis* will agree that the description is apt. On a low branch, in scrub, or on the ground amongst fallen leaves, it is for ever turning, dodging, jerking, spreading and closing its tail, and uttering a low chattering "chirr".

My first note of its breeding season is on 12th February, when I saw an adult bird accompanied by a newly fledged juvenile. Later on, I found nests in February, March and April. All the nests were in secondary jungle or thick scrub; one actually on the ground, another just above ground level, and a third three feet from the ground, in a palas tree (fan-palm, *Licualas*). The nest in each case was a small pad of coconut fibre, loosely made and protected by an equally loosely woven dome of bamboo leaves, or dry lalang and a little grass, in one instance. One nest contained three eggs, another two, partly incubated; a third, two young birds. The third nest, which was in fairly thick secondary jungle, was discovered quite by chance. On my way along the path I disturbed a small owl, *Otus* sp., which, when it flew near the babbler's nest, was set upon and mobbed by the parents, and later by a collection of other small birds, with such a noise and fuss that I thought there must be some special reason for it, and so searched round, and found the nest.

The eggs, which measure about .71 × .5 inches, are ovals, somewhat pointed, and glossy. The ground colour is white, spotted with reddish brown. Sparsely distributed at the smaller end of the egg, the spots are, at the larger end, congregated into a zone, and have underlying them a few spots of a pale purplish shade.

On 5th April, a *Mixornis* was brought in, said to have been shot at a nest which was in a position similar to those found by me, and constructed of the same materials, except that fine rootlets were used for the pad instead of coconut fibre. The eggs, however, were quite different. Measuring about .75 × .57 inches, they were rather rounded ovals, glossy, pale green, heavily marked all over with spots and blotches of a warm reddish brown, and with the usual purplish under markings, particularly at the larger end.

I understand that *Mixornis* has, by other observers, already been noted as laying two types of egg; but as on this occasion I was not present when the parent was shot, I give the record with reserve.

Copsychus saularis musicus (Raffles). The Straits Robin.

Malay.—*murai.*

It is almost unnecessary to write a note on the nesting habits of a bird so familiar to Malayan residents as is the "murai".

It nests from February to July. The usual clutch is three, sometimes four. The eggs are blue-green, thickly marked with various shades of brown, the size and distribution of the markings varying considerably even in the same clutch. Rather glossy, somewhat rounded ovals, those I have measured average .92 × .70 inches.

The nest may be situated almost anywhere not very far from human habitation. Of the very large number of nests I have seen, only a few were in bushes or hedges; some were under the eaves of a house, a number in shallow holes in trees, or in a depression at the top of a rotting stump, and an equally large number at the junction of frond and stem of coconut or other palms at any height from three to twenty feet from the ground. One nest was made in a cooking pot, coloured black and white and upturned on a pole, to act as scarecrow in a Tamil squatter's kitchen garden; another, on top of a growing bunch of bananas, four feet from the door of a squatter's hut.

If the bird is allowed to bring up its family without disturbance, the same site is often used in successive seasons, or twice in the same season.

When made in holes, or in a palm, the nest frequently consists of only a few strands of coconut fibre; elsewhere, it is usually a large untidy structure of grass, roots and dead leaves, lined with fibre, with which are very often interwoven a few bullock or buffalo hairs.

Orthotomus atrigularis atrigularis Temm. The Black-necked Tailor-Bird.

O. sutoria maculicollis Moore. The Long-tailed Tailor-Bird.

O. sepium cineraceus Moore. The Long-tailed Tailor-Bird.
Malay.—*laki padi* (vaguely).

These little warblers are well known because of the ingenious method by which they sew their nests to growing leaves.

I have found nests of *O. atrigularis* in February and March. The first nest found was in an abandoned kampong, in a low bush, about three feet from the ground. This nest, which was a pouch of fine grass, lined with the same, and ornamented on the outside with a few blobs of green and white vegetable down was sewn to the two drooping leaves between which it hung by a material which was, I think, cobweb twisted into threads. It measured about three and a half inches in total depth, and two and a half inches across at its broadest. The egg-chamber was about two inches deep, and contained four eggs, pale greenish blue, with fairly large blotches of pale rufous, and some small dark brown specks and scriggly markings at the larger end. Somewhat glossy, rather blunt ovals, they varied slightly in size, from .62 to .68 inches in length by a uniform .45 inches in breadth.

Another nest, found twelve feet from the ground in a horse-mango tree *(Magnifera foetida)*, close to a Malay house,

was similar in size, and hung between two leaves as before, but was constructed almost entirely of cotton-down, which material was also used for the sewing. Here and there, particularly at the nest rim, were a few strands of fine, dry grass and a little green down; but seen from below, the body of the nest looked exactly what closer examination proved it to be, a thick pouch of tree-cotton.

My nests of *O. s. maculicollis,* found in February, April and May were of a different type. Between three and five feet from the ground, each was sewn into a single large leaf, which hung from the plant at an angle of forty-five degrees, the midrib of the leaf forming the approximate centre of a sloping roof to the nest.

The birds had made several false starts, and I was able to deduce to some extent the method of working. It seems that the bird first chooses a large soft flattish leaf, pulls down the outer edges, and sews them together with strands of cotton or other down, drawn through holes which have been pierced in the edges of the leaf, and secured by knotting the sewing material into little blobs, bigger than the sewing holes. Where work on a leaf had been abandoned, it seemed generally to be because the holes had been made too near the edge of the leaf, and had torn when a strain was put on them.

The nesting material, in this case very fine grass, is then brought, and a compact, tidy little nest is constructed. The *O. s. maculicollis* nests are about three and a half inches deep overall, (the egg-chamber about two and a half inches inside depth), and six inches in circumference at their largest. The lower wall and bottom of the nest, are thick; at the back, there are only a few strands of grass, up against the leaf. Here and there, a strand is drawn through the leaf, and fixed in position by a blob of down; and finally, the broadest portion of the nest, showing between the edges of the leaf where these are about an inch apart, is ornamented with some green vegetable down.

The clutch is either three or four. The eggs are very like those of *O. atrigularis,* but nine specimens average slightly smaller, .63 by just under .45 inches.

A nest of *O. s. cineraceus,* found in January, 1932 was very like those of *O. s. maculicollis* above described, if anything rather more compact and carefully made. It contained two eggs, just beginning to incubate, marked like those of the other species, but with the ground colour a very pale green, with just a tinge of blue. They measured .61 × .42 inches, and the small end was rather pointed. In April, however, I took two nests of a third type. Both were three or four feet from the ground, sewn into large leaves, but the nests were small cups, about two and a half inches in total depth, made externally of fibrous material, much coarser than usual, and much less neatly put together. One nest was profusely, the other lightly lined with soft white down, and the outside of both was ornamented with some of the green material used by the other species.

One clutch of two eggs, beginning to incubate, measured .65 and .63 × .42 inches, the colour was creamy white with spots and blotches of reddish brown, more thickly congregated at the larger end, and with a few underlying purplish markings; the other clutch, also consisted of two eggs, slightly longer (.67 × .44) and more pointed, pure white, with small specks of brown and purplish brown, most numerous at the large end of the egg, sparse elsewhere. These eggs were also partly incubated. Finally, a clutch of three, in January, 1933, were pinky white in ground colour, more or less evenly marked all over with numerous small spots and flecks of reddish brown, and, at the larger end. a very few underlying markings of pale purple. They averaged .62 × .42 inches, and were long ovals, slightly pointed, and rather glossy.

I have set down my notes on the nests of these birds as a starting point for further observations, to find whether the different types of nest are specific or due to individual idiosyncrasy; and whether eggs of other species vary as much as do those of *O. s. cineraceus*.

Burnesia flaviventris rafflesi (Tweed.). The Yellow-bellied Wren-Warbler.

Malay.—*laki padi.*

Nests of this little warbler were found from January to June. All were situated in thick lalang, and were one and a half to two feet above the ground. The nest is not attached to the lalang, but merely built between the stems, which at that height from the ground are sufficiently strong to bear its light weight. It is usually a loosely constructed ball, about the size of a large orange made of dry bamboo and lalang leaves, interwoven with fine grass, which material is also used for lining the egg-chamber. One nest had on the outside wall, a piece of sloughed snake skin. The entrance is roughly circular, placed centrally on one side. Occasionally more carefully constructed nests may be seen. One on which I have notes was built externally of fine stems of dry grass, some with the flower-heads still attached, fibre, and lalang heads, compacted here and there with a little cobweb: internally it was lined, very neatly, with fine fibre.

The clutch is three or four, generally, in my experience, three. The eggs, which are rounded ovals, and extremely glossy vary little in size, most eggs being about .59 × .46 inches but

I have one egg measuring only .55 × .43 inches. The colour is most unusual. At the larger end there is a cap of rich reddish chestnut, shading to a paler colour on the rest of the egg. Eggs vary a good deal in depth of tint, and light and dark coloured eggs may be found in the same clutch. Their peculiar colour and extremely high gloss make them look more like reddish beads, than birds' eggs.

Cisticola juncidis malaya Lynes. The Malayan Grass Warbler.

Malay.—*laki padi.* This name is given to any small bird of the warbler type, which frequents grass and lalang land.

Several nests were found from February to May.

The nest is very flimsy, purse-shaped, and three to four inches deep overall, the inside depth of the egg-chamber being one and a half to two inches. The nest rim is often noticeably higher at the back of the cup.

The materials used are dry lalang, very fine dry grass and lalang flowers, mainly the latter, which alone are used for lining the egg-chamber. The nest is placed amongst low lalang from six inches to two feet from the ground, attached to and supported by some of the young blades, which are bent over and interwoven with the dry nesting material.

One or two eggs are laid, white, with a greenish tinge, marked all over with minute brown specks, most numerous at the larger end, where also are some very faint underlying greyish markings. Oval, slightly compressed at one end, the egg measures about .63 × .45 inches; for so small an egg, it has a relatively tough shell, with a slight gloss.

Corvus coronoides macrorhynchus Wagl. The Southern Large-billed Crow.

Malay.—*gagak.*

I have seen crows' nests in the mangroves, in January, forty to sixty feet from the ground, and containing four or five eggs.

On 12th March I took a nest, which was built on top of an isolated tree sixty feet high, near a main road. The nest was a pile of sticks two and a half feet in total depth by about two feet across, the egg-chamber being about a foot deep, lined with strands of coconut fibre, and a few human hairs.

Four eggs, just beginning to incubate, varied in length from 1.62 to 1.76 inches, and in breadth from 1.15 to 1.2, averaging 1.69 × 1.19.

Pointed at one end, not glossy, they were of a blue-green ground colour, heavily marked with brown, dark brown, and some small spots of almost black, the markings being spread all over the egg, but most heavily congregated at the larger end.

Dicrurus longicaudatus intermedius Blyth. The Long-tailed Drongo. Malay.—*chĕchawi.*

This drongo, which has hitherto only been recorded from as far south as Alor Star, was in 1932 discovered to be breeding in Sitiawan. It seems probable that it is only a summer visitor to the district: I have no record of its occurrence except during the breeding season.

On 13th April I found a nest, forty feet from the ground on a small horizontal outer branch of a rubber tree.

Considerable difficulty was anticipated in getting the eggs, but a Javanese, who has a local reputation as a climber, was called into consultation. He first supported the branch which held the nest, by roping it to a stout branch higher up the tree; then, having tied one end of a second rope to the same stout branch, he walked gingerly out towards the nest, taking as much of his weight as he could on the rope, with one arm. It is not surprising that by the time he reached the nest, his hand shook somewhat, so that one of the eggs was dropped. The other two he brought to safety, in his mouth!

The nest is a shallow saucer, placed in a fork, with part of the rim overlapping the arms of the fork on both sides, so that the nest hangs like a cradle. It is only about four inches in external diameter, and an inch deep—a very small nest, considering the size of the bird. This nest was made of *akar sepuleh,* a creeping plant, with small, flat leaves, found growing on rubber trees, usually at a fork. Some of the leaves were left on the stems used to make the nest, but most of them had been picked off.

The floor of the egg-chamber is loosely woven, and in some cases the eggs can be seen from below; the rims which bear on the supporting branch, are strong and well made. The outside of the nest is compacted and adorned with cobwebs, green moss and lichen.

There were three eggs, partly incubated, measuring .9 × .72 inches. Smooth, not glossy, rounded ovals, the ground colour is a beautiful pale pink, marked sparsely all over with small brown spots, and with larger blotches of brown and purplish brown, underlaid with pale purplish grey.

Four other nests were noted, in May and June. All these were found twenty to thirty feet from the ground, in outer branches of "perepat" trees.

This and other drongos often draw attention to the existence of their nests by their habit of swooping at the heads of passers by. The nest described above was first brought to my notice by a report from a rubber tapper, who was disturbed

in his work by the antics of the birds, whenever he approached the tree in which they had their nest.

Aplonis panayensis strigatus (Horsf.). The Malay Tree-Starling.

Malay.—*pĕrling.*

The glossy starling is not a common bird in this locality but may be seen in kampong country, feeding on the berries of certain trees.

All the nests I have seen were in the mangroves, generally very high up, in rotten branches of "perepat" trees, so that although birds were frequently watched carrying nesting material, it was a long time before I found a nest in an accessible position.

Nesting took place in March and April. On 26th April I was able to obtain a clutch. Twenty-five feet from the ground, a large "perepat" branch had broken off, and at the end of it a hole extended horizontally inwards for eighteen inches. In this hole was the nest, a large untidy collection of dry serdang leaves (a fan-palm, *Livistonia cochinchinensis*), straw, bits of rope and other rubbish; the eggs were laid on a pad of green leaves of the jawi-jawi tree *(Ficus rhododendrifolia)* torn in pieces and arranged to line the egg-chamber.

There were three eggs, quite fresh, and somewhat glossy. They varied remarkably in shape, and also in distribution of markings. All were alike in ground colour, a beautiful blue, with a tinge of green. One egg, measuring .99 ×.68 inches, was a blunt oval, blotched and spotted all over with pale brown and purplish brown. Another, which measured 1.03 × .71 inches was very pointed at one end, the blotches bolder and more chocolate in colour, almost all at the large end of the egg; and the third, 1.1 × .69 inches, was very elongate, but not sharply pointed at the small end. The markings, in this egg predominantly purplish brown, were, with the exception of an occasional speck elsewhere, entirely confined to a small cap at the large end of the egg, where they almost obscured the ground colour.

Gracula javana javana (Cuv.). The Malay Grackle.

Malay.—*Tiong.*

This bird nests from December to May.

On 19th March, I found a nest. The parent bird was seen leaving a hole, forty feet from the ground in a large "perepat" tree. The hole was wide enough to admit my man's hand and forearm, but had to be widened, with a small axe, to enable him to reach the bottom of the nest, which was two feet lower than the entrance.

The chamber was lined with a few twigs and some coconut fibre and contained two young birds not long hatched.

Another nest, similar in all respects, was found, on 24th March, to contain a single nestling.

On 2nd May it was discovered that the same, or another pair of grackles, had gone back to the first nest, and two eggs had been laid, which, when I obtained them, were just beginning to incubate. This time the nest lining was not coconut fibre, but a few green "perepat" leaves.

The eggs, which measured 1.4 and 1.45 × .97 inches were ovals, slightly compressed at one end, and somewhat glossy. Their ground colour was pale blue, rather sparsely spotted with light chocolate and undermarkings of a very pale purplish tinge, most of the spots being at the larger end of the egg. Another clutch, taken on 23rd December, averaged slightly larger (1.48 × .99 inches). The eggs were long and pointed, marked, as in the previous clutch, with indistinct spots of pale purple, but with only a few very tiny specks of brown.

Aethiospar fuscus torquatus (Davison). The Buffalo Myna.
Malay.—*gĕmbala kĕrbau.*

This attractive little starling is not uncommon here, being found in small parties in kampong country and near grazing grounds. Its Malay name, which means buffalo herdsman, is of course derived from its habit of perching on the backs of cattle, no doubt to feed on their insect parasites. I have watched parties of birds on the atap roofs of Malay huts, apparently searching for insects in the thatch; and they are frequently seen on the ground. When disturbed the birds generally fly up to one of the fronds of a nearby coconut palm. Occasionally I have seen flocks of thirty or forty birds, perched on dead trees, and keeping up a continuous chattering chorus. They hardly ever perch on living trees.

The nesting season is from February to May.

I have seen three nests in holes eighteen to twenty feet from the ground, in branches or trunks of dead "perepat" trees. In both cases when I was able to examine such nests, the eggs were laid on a scanty lining of small twigs, at the end of a horizontal tunnel about a foot in length, probably the deserted nest hole of some other bird.

A much more favoured site, however, is the crown of a tall coconut palm. One nest, where the bird had chosen a natural hollow at the base of a frond, was rather neatly made of dry grass, fibre and tendrils, and the egg chamber, which was about six inches in diameter, was lined with a few green leaves of a fig tree. Others, also in the tops of coconut palms, were large untidy collections of all sorts of rubbish—twigs, rootlets, dry grass, feathers, tinfoil, and paper cigarette wrappers; and lined, quite neatly, with coconut fibre.

I saw a nest in a coconut palm near a Malay house, on 7th February, which then contained five nestlings. The owner of the house told me that the same site has been used time after time, and indeed, at the end of March, I happened to pass the place just in time to see a crow carry off a nestling from the second brood!

The clutch varies from three to five. The eggs are glossy, pointed, and measure usually about 1.0 × .8 inches: but I have two exceptionally large eggs, long oval in shape, measuring 1.19 × .86, and 1.22 × .85 inches. Their colour is a beautiful greenish blue, without any markings.

Passer montanus malaccensis (Dubois). The Malay Sparrow.
Malay.—*pipit rumah; lochok-lochok.*

The nest of this bird must be familiar to everyone. Most houses contain a few of those untidy piles of rubbish, lined with feathers, in which are laid four to six eggs, generally dull and glossless but sometimes with a slight gloss and whitish to greenish grey, very variably marked with spots and blotches of different shades of grey and brown. Some eggs are almost white, quite sparsely spotted: others are so heavily infuscated that the ground colour cannot be distinguished. The average size of twenty eggs is .76 × .56 inches.

I dislike the sparrow, and discourage him as much as I can. His noisy quarrelsome habits drive other birds away, and when he can, he steals nesting material from the partly constructed nests of more welcome visitors. In an endeavour to lessen the sparrow population of my house and compound, I have of late years destroyed their nests whenever possible, and to give the birds their due, they display remarkable ingenuity in discovering sites which are sufficiently inaccessible to be safe from my interference.

Munia maja maja (Linn.). White-headed Munia.
(pipit kĕpala putĕh).

M. atricapilla sinensis Blyth. Black-headed Munia.
(pipit kĕpala hitam).

M. punctulata fretensis Kloss. Spotted Munia.
(pipit pinang).

Uroloncha striata subsquamicollis Stuart-Baker. Sharp-tailed Munia.
(pipit hitam).

The Java sparrow *(Munia oryzivora)* occurs very rarely in this neighbourhood. Two or three times only in the course of years, I have noted a pair, or a party of three, which appeared, were seen daily for a week or so, and departed as suddenly as they had arrived.

The four weaver-finches mentioned above all build fairly large globular nests, with an entrance at the side, and lay unspotted white eggs.

Nests of *M. maja* may be found in any month of the year, in bushes, hedges, trees, palms, inside a large canna leaf, or even in pineapple beds, at any height from two to fifteen feet from the ground. They are loosely constructed of coarse grass and bamboo leaves, lined with finer grass, and the usual clutch is five or six. Eggs measure .64 × .47 inches, and are without gloss, but slightly translucent when quite fresh.

This is by far the commonest species, the second being *M. atricapilla,* which is much less of a garden bird, but at certain times of the year joins with *M. maja* in great flocks, and becomes one of the worst plagues of the padi planter.

All the *M. atricapilla* nests I have found have been in lalang or low bushes, from nine inches to four feet above ground level, between January and May. The nest is generally made of rather finer grass than that employed by *M. maja,* and the flower-stalks of lalang are also largely used. In quite a number of nests, the ends of grass stems are left projecting about an inch, forming a sort of eave over the entrance hole; and this is also done by *Uroloncha. M. atricapilla* sometimes nests more or less socially. On several occasions I have found four or five nests within a ten yard circle, in a lalang plain. The full clutch is generally five, and seventeen eggs average .64 × .46 inches.

M. punctulata fretensis, as implied by its Malay name, frequents palms of the areca and sealing-wax *(Cyrtostachys lacca)* type; and all nests I have seen have been in the tops of such palms, and at a height of twelve to eighteen feet, between February and May. They appear to be rather more neatly made and tightly woven than those of the previous species. The usual clutch is four or five, and eggs measure about .61 × .43 inches: there is sometimes considerable variation in the size of eggs within a single clutch.

My *Uroloncha* nests, on the other hand, have all been on fruit trees, between seven and twelve feet, generally not far from the outer end of a branch. Made externally of grass, dry leaves and bamboo, they are neatly lined with fine soft grass, and again five seems to be the normal clutch, eggs averaging .6 × .42 inches. I have found nests only in January and February, but probably the nesting season is extended beyond these limits.

Ploceus passerinus infortunatus Hart. The Malay Weaver-finch.

Malay.—*burong tĕmpua.*

The extremely interesting and amazingly well constructed nests of this species, and the half nests, provided with a cross bar, which are said to be used as perches or swings by the males, have been described by several observers, and I intend to record here only such of my observations as do not quite tally with notes on the nidification of *Ploceus,* as given in Robinson's Volume 1.

I have seen a large number of nests in January, and others, not so numerous, from February to June. Most of the nests hung from small trees in "belukar" and "lalang", a few from bamboos and coconut fronds; in every case except one, the surroundings of the nest were infested with red ants *(Oecophylla smaragdina).* Most of the nests were lined with the light downy seeds of lalang, and one nest contained a single wing feather of—I think—a rail. The clutches were four, five, and six. The eggs are white, oval, long and pointed. Measurements of sixteen eggs vary from .91 to .78 in length by .6 to .54 in breadth, and average .82 × .57 inches.

Anthus richardi malayensis Eyton. The Malay Pipit.

Malay.—*tĕmpua tanah.*

A familiar little bird, common everywhere on lawns and dry grass land.

The nests may usually be found, in this district, from February to April, situated on the ground, in short grass or lalang, generally placed in a small natural hollow, which is lined by the bird with dry grass, lalang and small rootlets, tightly compacted into a pad about an inch thick and five inches in diameter, curling upwards at the rim; the back and sides are protected by a loosely woven wall of the same materials, which not infrequently forms a complete dome about five inches higher than the nest proper, and with a roughly circular entrance two and a half to three inches in diameter. Interwoven with the padding of the egg-chamber are always found a few hairs from the tails of cattle.

The clutch, in my experience, is generally three, occasionally four. The eggs are greyish white, sometimes faintly tinged with green or purple, and vary within the same clutch, both in shade of ground colour and as regards size, boldness, and distribution of markings, which may be almost confined to a blurred zone at the larger end of the egg, or very evenly distributed all over, and of widely differing shades of brown, greyish brown and purplish black. Some eggs are rather pointed, others much rounded. The average size of seven is .78 × .6 inches.

Quite often I have found stray eggs on the golf course, on lawns, and once on one of the firing points of a rifle range.

Chalcostetha calcostetha calcostetha (Jard.). Macklots' Sunbird.

Malay.—*kĕlichap hitam.*

I have found nests of this sunbird from January to June, none in the mangrove belt, but all in, or on the edge of scrub, near the sea.

The nests are often placed in singularly exposed positions, always on the outside of a bush or prickly stemless palm, between two and five feet from the ground. They are of the usual sunbird type, a roughly pear-shaped bag, hanging by its smaller end from a twig or palm frond. The total length of the nest is about five inches, its outside circumference at widest about seven inches. The entrance hole, which is in the top half of the outward side of the nest, is oval, and about one and a half inches vertically by one inch across. The depth of the egg chamber is about one and a half inches, measured from the lower rim of the entrance hole, which is protected by a small eave.

The bottom of the nest is fairly solid; the rest is somewhat loosely woven, very fine grass and fibrous material being used, and on the outside, bits of dry bark, and fragments of bamboo and palm leaves, some of which are allowed to hang down loosely. The materials used give the nests of this species a characteristic dingy brown, untidy appearance. Occasionally cobwebs are sparingly used to compact the outside nest wall, which may also be decorated with a little green moss.

The clutch is two. Usually the ground colour is a pale sienna brown, profusely overlaid with a slightly darker shade, the markings coalescing at the larger end into a zone of much darker and warmer colour.

Some eggs, however, are dingy grey, the ground colour being much obscured by a profusion of tiny markings of dull brown, especially at the larger end. Such eggs seem to be smaller than those first described, mine averaging .6 × .45 against .63 × .45 inches. Somewhat pointed ovals, they are highly glossy.

Anthreptes malaccensis malaccensis (Scop.). The Brown-throated Sunbird.

Malay.—*kĕlichap kampong.*

The nesting season of this species, in this locality by far the commonest of the *Nectariniidae,* extends certainly from January to July inclusive, probably longer. I have found nests in these and all the intervening months, the greatest number being in January and February.

Curiously enough, I have never found a nest in the situation which Robinson gives as the most usual one, *viz.,* hanging from the end of a leaf of a coconut or betel palm. A number of nests were in mango trees, between ten and fifteen feet from the ground; as many more in bushes, in scrub, from five to eight feet; one twenty feet from the ground in a rubber tree, several, on the coast, in low baru trees *(Hibiscus tilliaceus);* and one in the mangroves, forty feet from the ground in the top of a young perepat tree. This last seemed to me remarkable, both by reason of the height and situation, and because out of some twenty-five nests examined this season, it was the only one not placed in a site already infested by red ants.

The nest is of the same pear-shaped type as that of *Chalcostetha,* slightly less in depth and a little larger in circumference. The entrance hole is rather larger and has a much more pronounced eave. The walls are thin, but the inside is well lined with lalang down. Some cobweb is used on the outside, and a few of the usual slivers of wood, bits of dry bark, and so on, ornament it; but the nest has a much more tidy appearance than the last described. Generally great care seems to be taken in making firm the lower rim of the entrance, on which the bird lights for a moment before entering the nest. In almost all nests this rim is tightly and strongly woven.

Two eggs are laid, glossless, rather pointed ovals. They are pale lilac grey, heavily blotched all over with lavender grey, and with numerous fine scribbling marks of purplish brown and purplish black. There is a certain amount of variation in shape and density of markings even between eggs of the same clutch. Eggs I have measured, varying from .75 × .5 to .67 × .45, average .70 × .49 inches.

Leptocoma jugularis pectoralis (Horsf.). The Yellow-breasted Sunbird.

Malay.—*kĕlichap.*

A nest of this species was taken on 11th March, in a low coconut palm, near a Malay house. Nine feet from the ground, one of the leaves of an overhanging frond had been selected, and the midrib stripped bare of leaf for about eighteen inches of its length, six inches or more at the tip being left in its natural state. The nest, and its extensions above and below, were firmly bound to the midrib, with fibre, moss and a little cobweb, for the whole eighteen inches, giving the impression of a bunch of kampong refuse caught by and dangling from the frond.

The nest proper was an inverted pear, four inches from top to bottom, the entrance furnished with an eave. The whole inside of the nest, and the eave, were thickly lined with soft cotton down, and the flimsy transparent outer wall of fine fibres only served to hold the downy lining in shape. The top of the nest was continued as a narrow cone, for four inches above the eave, tapering to a point just where the stripping of leaf from midrib commenced; below the nest there was a long tail, quite ten inches, made of slivers of decaying wood, pieces of dry coconut leaf, bits of bark, and combings from the hair of some kampong lady. The whole structure from top to tail tip, was decorated with wood refuse, blobs of down, strands of sewing cotton, skeleton leaves, green moss, spider castings and fragments of other kampong rubbish.

Two other nests were seen, on 20th April and 30th May. One was about six feet from the ground, dangling from the end of a low perepat branch; the other only three feet from the ground, in a very exposed position, hanging from an outer branch of a prickly bush, (*Canthium* sp.). On this bush were also two incompleted nests of the same species, probably unsuccessful attempts to reach the standard of perfection desired by the birds. Both finished nests were very much the same as that described above, not quite so generously lined with cotton down, and the outside decorations varying according to what particular kind of refuse was most easily obtainable in the locality.

A nest found in the following December was lined with the breast feathers of a bulbul, and had, amongst other decorations on the "tail", a wing feather of a snipe. This nest, like the previous ones, was near ground level: but on 23rd February I saw a nest thirty feet up dangling from the outer branch of a rubber tree by a single strand of strong fibre: and still stranger was the situation of a nest in March—firmly bound to a roadside telegraph wire! Both the last mentioned nests, for obvious reasons, were furnished with only a short "tail": the decorative tendency of the builders had to be sacrificed to the safety of their nests.

The eggs are pale green or greenish white, blotched with dull brown and dull purplish grey, with some tiny specks, and, at the larger end, some short, very fine writing marks of very dark brown, almost black. Some eggs have the brown and grey markings fairly evenly distributed, others being more heavily marked at the larger end. Pointed ovals, without gloss, they measure about .60 × .43 inches.

Dicæum cruentatum ignitum (Begbie). The Scarlet-backed Flower-pecker.

Malay.—*Sĕpah putĕri.*

In an abandoned rubber holding, grown up in lalang and bushes, I found both this and the following species, in considerable numbers. Most of the trees carried heavy growths of *Loranthus,* a parasitic plant of the mistletoe type. Flower-peckers are very fond of *Loranthus* berries, and are said to play a large part in spreading the growth to unaffected trees, by depositing the viscid seeds on a branch, to which they adhere, and finally take root.

The nest is a most delicate structure, and is rather difficult to find, being very small, and frequently placed at some height from the ground, at the end of a lateral branch, in the centre of and concealed by the terminal bunch of leaves.

I took a nest on 10th March, twenty feet from the ground. It was an egg-shaped pouch, three inches in total depth, with a maximum girth of five and half inches. The entrance hole, which was roughly circular, and about an inch in diameter, was placed in the top half of the outward side of the nest. The attachment of the nest to its supporting branch was firm and well made, very fine fibre being used, the entrance rim was a tightly woven rope of the same material, which was also used, but sparingly, to bind together the body of the nest. This was constructed and lined with the whitest of lalang down; the walls were thin, but the egg-chamber was thickly lined and of an exquisite softness. To the outer wall of the nest, by way of decoration, were attached two or three slender strips of thin bark.

It contained a single egg; a long oval, slightly compressed at one end; greyish white, and glossless. It measured .59 × .41 inches, and was just beginning to incubate. The clutch may be two, for a nest seen in January contained that number of eggs.

Dicæum trigonostigma trigonostigma (Scop.). The Orange-bellied Flower-pecker.

Malay name.—*sĕpah putĕri.*

Nests of this species, seen in March, each contained a single nestling.

Placed, like those of *D. c. ignitum,* at the end of branches, these nests were only eight feet from the ground, one attached to a young rubber tree, the other to a bushy shrub, growing in the "belukar" not far away. The shape and construction of the nests is much the same as that of the last described, but they are rather more compact, a somewhat greater amount of fibre being used to bind the outer walls and egg-chamber, to the lining of which, besides lalang down, a little cotton down is added. The extra-mural decorations take the form of a little green moss and the dried excreta of caterpillars. The entrance hole, instead of being circular, is long and oval, one and a half inches from top to bottom, and hardly more than half an inch across at its widest.

Zosterops palpebrosa williamsoni Rob. and Kloss. The Malay White-eye.

Malay.—*kĕlichap pĕrĕpat.*

This little bird, which is extremely common here, both in the mangroves and elsewhere, builds a small neat cup-shaped nest of fine grass and fibre, lined with still finer material, compacted on the outside with cobweb, and sometimes decorated with a little green moss. The nest hangs like a cradle in the horizontal fork of a twig, part of the rim being securely bound to each arm of the fork. A peculiarity is that in almost all the nests I have seen, a kind of mooring rope is thrown out from the rim of the nest to a third twig, often as far as two inches away. Sometimes this is only a single strand of the same material as is used for the outside of the nest, looped round the twig and brought back to the point from which it started; in other cases several strands are woven together into a regular cable, an eighth to a quarter of an inch thick.

I have examined a large number of nests in "perepat" and "api-api" trees, from five to fifteen feet from the ground; and with a glass I have seen nests high up in rubber trees, and also found several on the ground, blown down from their lofty position in a gale.

The eggs are unspotted; pale whitish blue, not glossy, they average about .60 × .43 inches, but vary considerably in size, my smallest egg being only .55 × .41, and my largest .62 × .47. The nesting season is extended, certainly from December till August.

The white-eye is a busy, lively little bird, never still for a moment. Its energetic habit, however, does not send it far afield in search of nesting material when some can be obtained close at hand for one day in June, I watched a pair of white-eyes busy dismantling the nest of an *Iora,* from which the young birds had flown only the day before.